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TB78: Food Habits and Body Measurements of Mourning Doves in Southwestern Maine

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FOOD HABITS AND BODY MEASUREMENTS OF MOURNING DOVES IN SOUTHWESTERN MAINE

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Abstract

This study presents the first published information on the food in the crops of Maine mourning doves collected at the Western Maine Forest Nursery at Fryeburg. The main food was conifer seed (54.6 percent volume). Red and white pine totaled 37.6 percent of foods consumed. Corn and goosefoot comprised an additional 30.9 percent by volume in the diet. The heavy use of conifer seed by doves in a nursery suggests the need to treat the seed with a repellent. Maine doves were longer in total length than doves from New York and several southern states. The sex ratio of doves in the samples was heavily distorted to males.

Introduction

Published information on mourning dove biology in northern New England is meager. Detailed information on the species in Maine is lacking. Palmer (1949) commented about the species being common in southern Maine as the "population continues to increase slowly, and the bird is extending its breeding range in the State." Powell (1949) reported increasing occurrences of doves on Swan Island, Sagadahoc County where the birds fed on grain. In recent years, according to Christmas Bird Counts the wintering dove populations have increased dramatically. Counts from 1953-1969 averaged 2.7 doves per Christmas Count. From 1970-1974 the average count increased to 395 reaching a peak of 833 in 1973, being recorded on 15 or 19 Maine Counts.

This study presents the analysis of the crop contents from 120 Maine mourning doves collected by shooting while feeding on seedbeds at the Western Maine Forest Nursery at Fryeburg, Oxford County, Maine. The birds were obtained during May and June 1964, 1965, 1968-1970. Assessment of morphological measurements and breeding conditions was also made.

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Methods

Dove specimens were collected with a shotgun under a depredation permit issued by the Bureau of Sport Fisheries and Wildlife, U.S. Fish and Wildlife Service.

Morphometry

The birds were shot and promptly frozen. Total length, wingspread, tail length, and wing chord length were measured with a centimeter ruler to ± .10 centimeter.

Cropgland development was recorded as described by Lehner (1965):

Very Slight (VS)	Crop gland as measured from the inside of the crop less than the size of a dime.
Slight (S)	Larger than a dime but not showing involution on the outside of the gland.
Moderate (M)	Showing involution on the outside of the gland and slight flaps of skin on the outside.
Well Developed (WD)	Prominent involution on the outside of the gland and prominent flaps of skin on the inside.
Very Well Developed (VWD)	Pigeon milk in the crop glands.

Birds were aged by a technique described by Herring (1963). They were not weighed due to excessive dehydration resulting from the prolonged period of freezing.

Food Habits

Crop and esophogus contents were scraped by probe or scalpel onto a petri dish and thoroughly air dried. The contents of each crop were initially separated with a soil sieve set and then by hand under a binocular dissecting microscope.

Large seeds, snails, and animal matter were measured by water displacement in graduated cylinders. Large quantities of large seeds were measured to ± .5 ml in a 50 ml cylinder. Small quantities of large seeds, small seeds, and animal matter were measured to ± .1 ml in a 10 ml graduated cylinder. The smallest seeds, (*Amaranthus* and *Chenopodium*), and grit were packed in the dry state in a 10 ml cylinder and measured to ± .1 ml. Items of less than .1 ml were recorded as trace items. Data was analyzed by the aggregate percentage of volume and frequency of occurrence methods.

Food items were identified by comparison with photographs in U.S. Forest Service (1948) and Martin and Barkley (1961) as well as by comparison with the seed collection of the School of Forest Resources, University of Maine.

Results and Discussion

Food Habits

Coniferous seed accounted for 54.6 percent of the total volume and 66.7 percent frequency in 120 Maine mourning dove crops (Table 1). This high percentage of conifer seeds was no doubt influenced by the feeding activity of the birds at the collection site. Abbott (1966) observed large numbers of doves feeding on white pine seed in western

Table 1. Crop contents of 120 mourning doves collected in Fryeburg, Maine at Western Maine Forest Nursery, May and June, 1964-1970.

Species	Frequency of Occurrence (%)	Aggregate Percentage of volume
Red pine (*Pinus resinosa*)	47.5	24.9
Corn (*Zea mays*)	38.3	22.8
White pine (*Pinus strobus*)	27.5	12.7
Goosefoot (*Chenopodium album*)	52.5	8.1
Scotch pine (*Pinus sylvestris*)	18.3	5.7
Yew (*Taxus capitata*)	10.8	3.9
Norway spruce (*Picea abies*)	10.0	3.0
Austrian pine (*Pinus nigra*)	8.3	3.0
Sorghum (*Sorghum vulgare*)	5.8	2.5
Pigeon milk	12.5	2.1
Pigweed (*Amaranthus sp.*)	13.3	1.9
Ragweed (*Ambrosia sp.*)	11.7	1.5
White spruce (*Picea glauca*)	2.5	1.4
Wheat (*Triticum aestivum*)	4.2	1.2
Grit	19.2	1.0
Muskmellon (*Cucumis melo*)	2.5	1.0
Millet (*Panicum miliaceum*)	12.5	0.9
Mustard (*Brassica sp.*)	3.3	0.8
Snails	15.0	0.6
Yellow bristletail grass (*Setaria lutescens*)	15.8	0.3
Buckwheat (*Fagopyrum esculentum*)	6.7	0.2
American elm (*Ulmus americana*)	1.7	0.2
Byrrid beetles (*Byrrus sp.*)	17.5	0.1
Tinfoil	0.8	0.1
Rye (*Secale cereale*)	0.8	0.1
Lespedeza (*Lespedeza sp.*)	0.8	0.1
Barnyard grass (*Echinochloa crus-galli*)	2.5	T
Red sorrell (*Rumex acetosella*)	1.7	T
Fescuegrass (*Festuca sp.*)	0.8	T
Bivalve mollusc (*Pismidium sp.*)	0.8	T
Black locust (*Robinia pseudoacacia*)	0.8	T
Violet (*Viola sp.*)	0.8	T
Crabgrass (*Digitaria sp.*)	0.8	T

Massachusetts during 1962, a year of unusually heavy seed production. R. Eastman (personal communication, July 25, 1975) stated that the nursery at Fryeburg has had a history of mourning dove damage to germinating conifer seed beds for the past 15 years. The heavier usage of red pine (24.9 percent) vs white pine (12.7 percent) reflects availability rather than preference since the white pine is seeded in the nursery beds in the fall. The red pine is seeded in the early spring and is more readily available to the doves. Loss of germinating conifer seeds to doves may be curtailed by coating the seeds with Arasan 42S and a latex sticker as suggested by Abbott (1958). Corn and goosefoot comprised an additional 30.9 percent by volume of their diet.

Doves are almost completely vegetarian in their food habits. Snails, molluscs, and beetles composed 0.7 percent by volume of food eaten. These findings conform with those of Korschgen (1955) and Beckwith (1959). The high number of snails may represent accidental feeding or purposeful feeding to meet a physiological need during the breeding season as suggested by McClure (1943).

Pigeon milk was found in 12.5 percent of the dove crop samples. Fifty of the birds (41.7 percent) had well developed or very well-developed crop glands characteristic of nesting doves.

The sex ratio in the sample was 275 males: 100 females ($N = 126$). This distorted sex ratio may be due to a disproportionate representation of wintering birds that had not migrated. According to Chambers *et al.* (1962) winter dove flocks in Missouri were predominantly males (274 males: 100 females). He concluded that male doves winter farther north than females. Another explanation may be the early morning collection period. According to McClure (1943) females incubate at night and early morning at the time when most of the sample was obtained. Thus males would be more vulnerable to shoot at the nursery.

Morphological Measurements

Wing length, tail length and total length were measured and compared (Figs. 1-3) with similar measurements recorded by Lehner (1965). No significant differences were noted in wing length and tail length of doves from New York and Maine. However, total length was significantly greater ($P < .05$) for both male and female Maine doves. Southern New York doves (Lehner 1965), in turn, were larger than specimens from Alabama, North Carolina, Virginia and Illinois. Maine dove measurements support Bergmann's Rule which states that races of larger body size are found in the cooler climate.

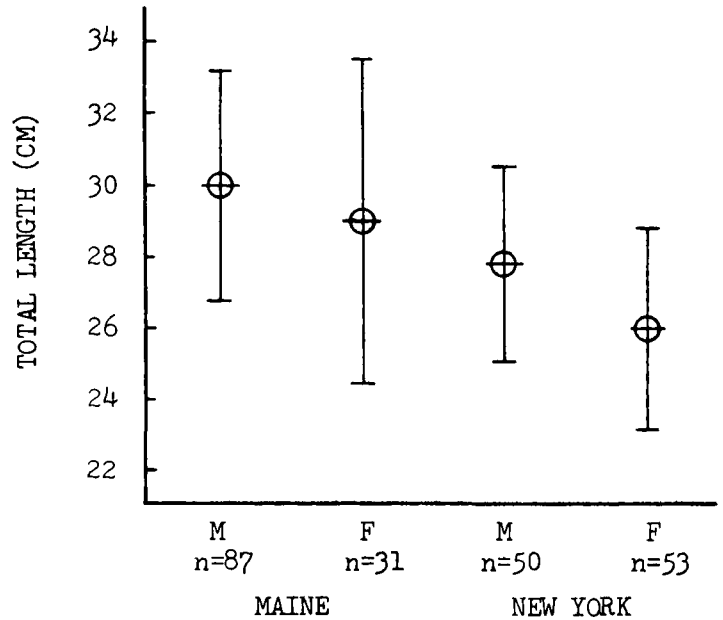

FIGURE 1. Comparison of total length of adult male and female mourning doves from Maine and New York. (Circles designate means and lines indicate ± 2SD.)

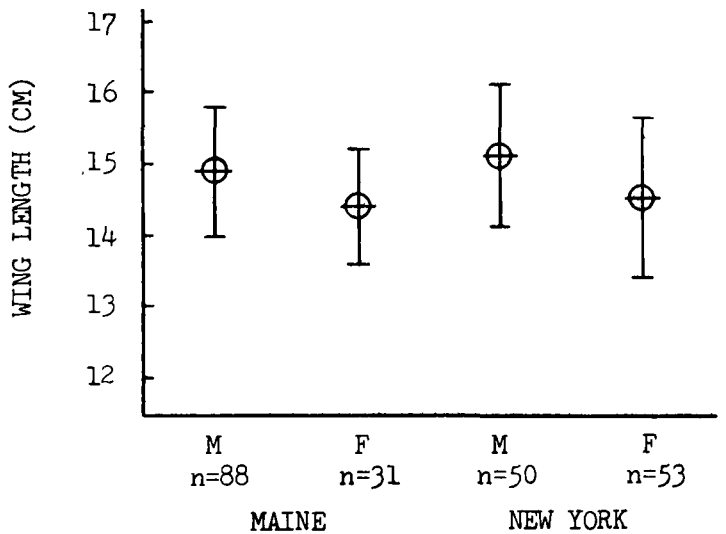

FIGURE 2. Comparison of wing length of adult male and female mourning doves from Maine and New York.

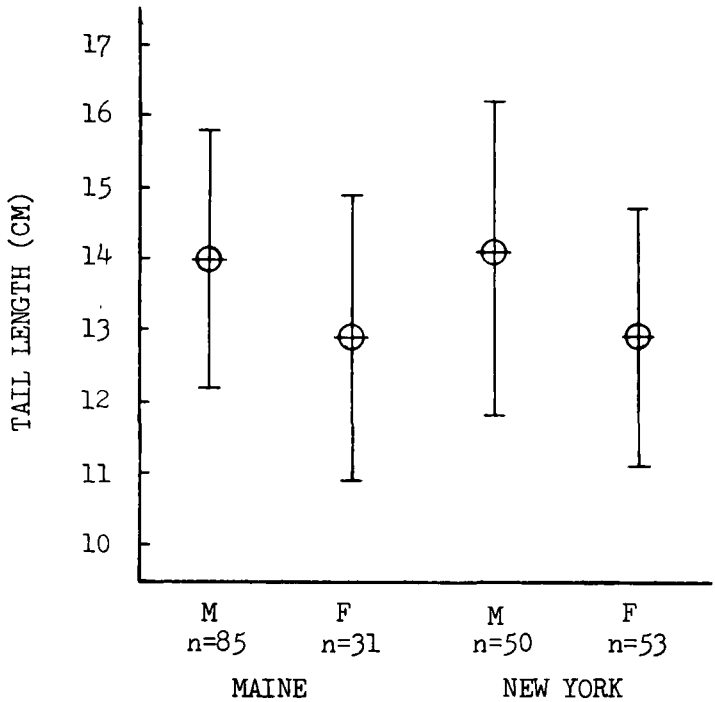

FIGURE 3. Comparison of tail length of adult male and female mourning doves from Maine and New York.

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